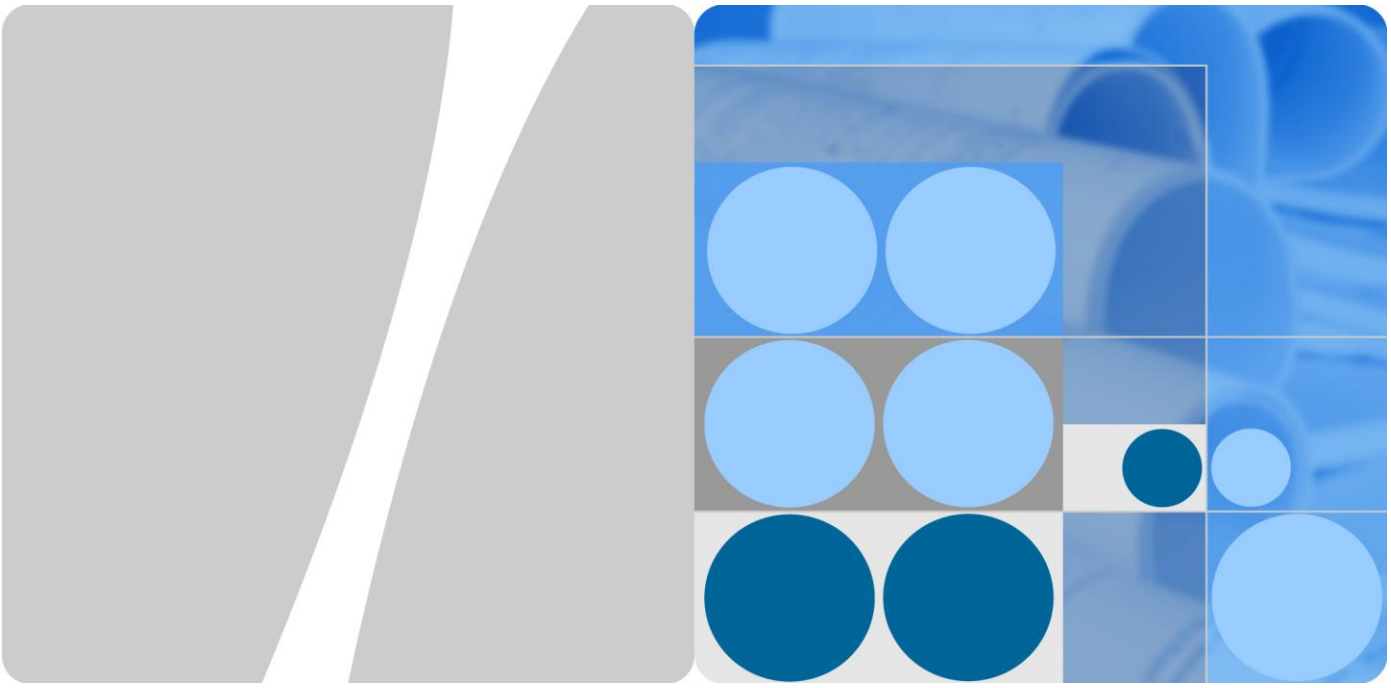

RRU3281 Description

Issue

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Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: http://www.huawei.com

Email: support@huawei.com

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1 Introduction

The RRU3281 is an outdoor remote radio unit and is powered by a power cabinet. It is a radio frequency (RF) module of the distributed eNodeB and is installed close to the antenna. The RRU3281 provides the following functions:

- Modulates and demodulates baseband signals and RF signals
- Processes data
- Amplifies power
- Detects standing waves

RRU3281 is newly designed to support the 4T4R mode, improving output power and carrier capacity.

The RRU3281 is configured with the bias tee (BT). The internal BT couples RF signals and OOK signals and transmits them through the TX/RX ports A and B.The internal BT also supplies power to the tower mounted amplifier (TMA).

The software of the RRU3281 is backward compatible with the eNodeB and OSS of the N-2 versions, where N indicates the current version number, for example, SRAN11.0/eRAN11.0 in this document. In addition, the software package of the three versions includes the RRU3281 software components. Therefore, the RRU3281 of SRAN11.0/eRAN9.0 can be used for SRAN9.0/eRAN7.0 and SRAN10.1/eRAN8.1, without affecting KPIs.

1.1 Appearance

Figure 1-1 shows the appearance of the RRU3281.

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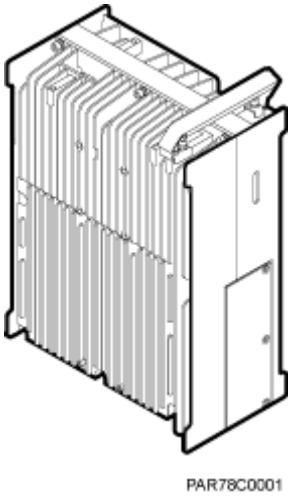
Figure 1-1 Appearance of the RRU3281



1.2 Physical Ports

RRUs have a modular design. Its external ports are located in the cabling cavity or at the bottom of the module.

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Figure 1-2 Ports on the RRU3281 panels

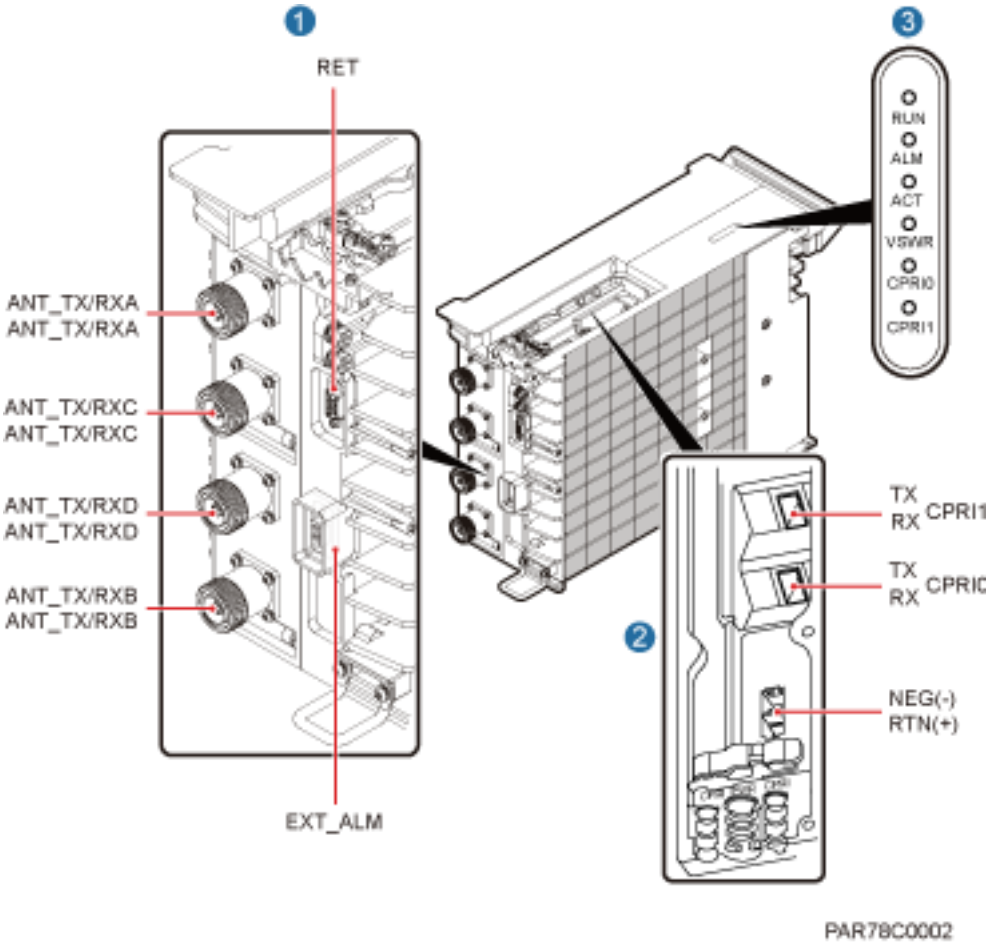

Table 1-1 Physical ports on the RRU3281

Port	Connector	Quantity	Function
Power supply socket	Tool-less male connector (pressfit type)	1	Receives –48 V DC power
Common public radio interface (CPRI) port	DLC	2	Connects to the baseband unit (BBU3900), or to another RRU for cascading
RF port	DIN, female	4	Connects to an antenna to transmit and receive RF signals
RET port	DB9	1	Connects to a remote control unit (RCU)
Alarm port	DB15	1	Receives external alarm signals

A BBU3900 and RRU3281 are connected through a CPRI port using an optical cable to transmit CPRI signals.

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2 Technical Description

2.1 Frequency Band

Table 2-1 Frequency bands

Frequency Band (MHz)	RX Frequency Band (MHz)	TX Frequency Band (MHz)	IBW (MHz)
2600 (band 7)	2500 to 2570	2620 to 2690	60

2.2 Capacity

Table 2-2 Capacity

Frequency Band (MHz)	Capacity
2600	Each RRU3281 supports three carriers.

2.3 Receiver Sensitivity

Table 2-3 Receiver sensitivity

Frequency Band (MHz)	1-Way Receiver Sensitivity (dBm)	2-Way Receiver Sensitivity (dBm)
2600	-106.3	-109.1

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NOTE

As recommended in 3GPP TS 36.104, RX sensitivity is measured under a 5 MHz channel bandwidth based on FRC A1-3 in the Annex A.1 standard, where the modulation scheme is QPSK (R = 1/3) and the system bandwidth is 25 resource blocks (RBs)

2.4 Output Power

Table 2-1 Typical Output power(RRU3281, 2600MHz, 4x40W)

Number of LTE Carriers	Output Power per LTE Carrier (W)	Bandwidth (MHz)
1	4 x 40	5, 10, 15, 20
2	4 x 15	5, 10, 15, 20
2	4 x 20	5, 10, 15, 20
2	carrier 1: 4 x 30 carrier 2: 4 x 10	5, 10, 15, 20
3	carrier 1: 4 x 10 carrier 2: 4 x 10 carrier 3: 4 x 20	5, 10, 15, 20
3	carrier 1: 4 x 10 carrier 2: 4 x 15 carrier 3: 4 x 15	5, 10, 15, 20

2.5 Power Consumption

NOTE

Configure one UMPTb1 and one UBBPd6 in one-carrier scenario, and configure one UMPTb1 and one UBBPd6 in two-carrier scenario.

In LTE FDD mode, the power consumption in two carrier scenarios is the same as that in one carrier scenarios. This document takes one carrier scenarios as examples to describe the power consumption.

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Table 2-4 Power consumption of the DBS3900(Ver.D) (-48V) (configured with RRU3281, 2600 MHz)

Configuration	Output Power (W)	Typical Power Consumption (W)	Maximum Power Consumption (W)
3 x 20 MHz 4T4R	4 x 40	1333	2053

2.6 Input Power

Table 2-5 Input power

Item	Specification
Input power	–48 V DC; voltage range: –36 V DC to –57 V DC

2.7 Equipment Specifications

Table 2-6 Equipment specifications

Item	Specification
Dimensions (H x W x D)	400 mm x 300 mm x 150 mm (18 L, without the housing)
Weight	≤ 21 kg

2.8 CPRI Port Specifications

Table 2-7 CPRI port specifications

Item	Specification
Number of CPRI ports	2
CPRI data rate	1.25 Gbit/s, 2.5 Gbit/s, 4.9 Gbit/s, or 9.8 Gbit/s
Topology	Star, chain, or ring

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Item	Specification
Cascading capability	• When the rate at the CPRI port is 1.25 Gbit/s: Cascading is not supported. • When the rate at the CPRI port is 2.5 Gbit/s: – Two levels are supported if the cell bandwidth is less than or equal to 5 MHz. – Cascading is not recommended if the cell bandwidth is greater than or equal to 10 MHz. • When the rate at the CPRI port is 4.9 Gbit/s: – Two levels are supported if the cell bandwidth is less than or equal to 10 MHz. – Cascading is not recommended if the cell bandwidth is greater than or equal to 15 MHz. • When the rate at the CPRI port is 9.8 Gbit/s: – Four levels are supported if the cell bandwidth is less than or equal to 10 MHz. – Two levels are supported if the cell bandwidth is greater than or equal to 15 MHz.
Maximum Distance from the BBU	• When the LBBPc, LBBPd1 or UBBPd3 is configured: 20 km • When the LBBPd2 or UBBPd4 is configured: 40 km • When the LBBPd3, UBBPd5, or UBBPd6 is configured: – Cell quantity ⩽ 3: 40 km – Cell quantity ⩾4: 20 km

2.9 Environment Specifications

NOTE

According to the installation scenario, traffic load, and carrier configuration, the output power of RRU3260 may temporarily decrease when they work in the highest 10℃ temperature range.

Table 2-8 Environment specifications

Item	Specification
Operating temperature	–40°C to +45°C (with solar radiation of 1120 W/m²) –40°C to +50°C (without solar radiation)
Relative humidity	5% RH to 100% RH
Absolute humidity	1 g/m^3–30 g/m^3
Atmospheric pressure	70 kPa to 106 kPa

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Item	Specification
Operating environment	Compliance standards: • 3GPP TS 36.141 • ETSI EN 300019-1-4 V2.1.2 (2003-04) Class 4.1: "Non-weather protected locations"
Shockproof protection	NEBS GR63 zone4
Ingress Protection (IP) rating	IP65

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3 Acronyms and Abbreviations

Abbreviation	Full Name
APM	advanced power module
BBU	baseband control unit
BT	bias tee
CPRI	common public radio interface
DC	direct current
RCU	remote control unit
MTBF	mean time between failures
RET	remote electrical tilt
RF	radio frequency
RRU	remote radio unit
TMC	transmission cabinet

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